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CR Console

AUTOMATIC IMAGE STITCHING SOFTWARE

OPERATION MANUAL

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INTRODUCTION

This manual explains how to operate the Automatic Image Stitching Software at the CR Console. For other functions/operations, refer to the “CR Console OPERATION MANUAL” and “CR Console OPERATION MANUAL, THE USER UTILITY OPERATIONS”.

OPERATIONS

The Automatic Image Stitching software enables users to combine multiple images to create a single image when multiple IPs are used to shoot images for viewing wide area.

1 Automatic Image Stitching Processing

This function performs automatic image stitching processing on read images. As the manual image stitching processing (page 9) cannot be performed to the images to which no automatic image stitching processing has been performed, be sure to perform operations described in this section first.

(1) Selecting exposure menus

Select exposure menus for image stitching by performing usual operation to display the Study Screen.

Because exposure menus for long-view images are usually to be selected to perform exposures for the source images, make sure that “WS” (Whole Spine processing) is displayed at the function field. (When selecting other exposure menus, set the function of exposure parameter to “WS”)

(2) Performing IP registration/image reading

When the IP registration/image reading is performed for first image to the selected exposure menu, the exposure menus for second and third images will be added. Perform the IP registration/image reading for each exposure menu. (When stitching two images, it is unnecessary to perform the operations for the exposure menu of the third image.)

If the image reading is performed in the background, suspend a study after the IP registration has been completed.

NOTES

- When the patient ID is not to be registered on the Barcode Reader, replace order of used exposure menus, before touching the image stitching icon.
- The image sizes that can be stitched are 14" × 14", 14" × 17", and 10" × 12". Images other than these sizes cannot be stitched with each other.
- The energy subtraction images cannot be stitched with each other.
- It is not possible to stitch the images read by the FCR XG-1 Reader and the images read by the FCR5000 series Image Readers together.
- Make sure that the IP registration is correct and the image reading direction is proper before the image reading. If images are read with wrong operations, modify wrong order/direction of image reading by performing manual image stitching processing (page 9) and/or modify wrong IP registrations by performing the image changeover operation. (However, the images with the distribution marks cannot be changed over.)
- When markers have been input on the source images with the marker input function offered by the CR Console, those markers will be erased to create the stitched image.
- The settable film-output format is 1-image format only. Other formats cannot be set.
- To implement long-view exposure menus and built-in equipment exposure menus in the same study, implement first image stitching processing for long-view exposure menus and then implement built-in equipment exposure menus.

- If automatic image stitching processing fails at exposure, a message appears saying that "Failed in automatic linkage of stitching images. Do you want to perform provisional processing? If you do not want to perform provisional processing, check order and orientation of images and retry same processing.". If you wish to perform temporary processing, select "Yes", and "No" if you do not wish to perform it. When you selected "No", you have to perform image stitching processing again.

(3) Performing the automatic image stitching processing

Select one of the source images, and then select . The automatic image stitching processing is performed.

When the image reading is performed in the background, no special operation is required as the automatic image stitching processing is performed after the completion of the image reading. In this case, one of the following actions is taken depending on the condition set at "Setup of an automatic study end" of the User Utility's Property Setting.

Finish exposure only : If this condition is set, study execution is completed after the automatic image stitching processing and studies are stacked in the "QA" list.

Finish exposure and QA : If this condition is set, study execution and the image editing (QA) are completed after the automatic image stitching processing and studies are stacked in the "Queue" list.

Suspend study : If this condition is set, the studies are stacked in the "Local WL" list without the automatic image stitching processing. In this case, redisplay the Study Screen to perform the automatic image stitching processing (as described in this section).

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When the automatic image stitching processing is completed, the stitched image is then displayed.

To change the stitched image display, select its thumbnail images, select , and then one of the following icons:

: Displays the stitched image.

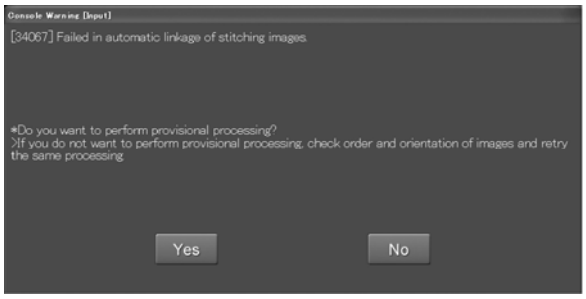
: Displays the first source image used for stitching.

: Displays the second source image used for stitching.

: Displays the third source image used for stitching.

: Returns to the monitor mode.

If a failure occurs when you are performing automatic image stitching processing, a message like that shown below appears.

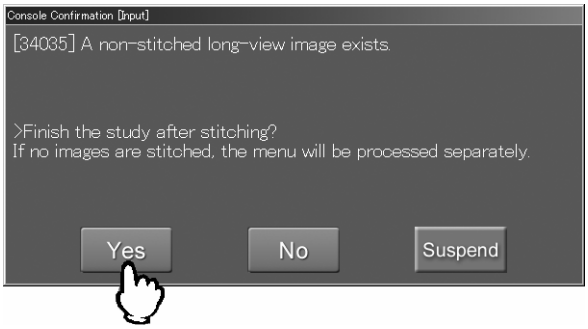

Console Warning [Input]
[34067] Failed in automatic linkage of stitching images.
*Do you want to perform provisional processing?
>If you do not want to perform provisional processing, check order and orientation of images and retry the same processing.
Yes
No

Yes : Temporary processing will be performed.

No : System processing will end without performing temporary processing. In such a case, you can perform automatic image stitching processing again. To perform it again, be sure to verify order and orientation of images.

An attempt to finish studies without performing the automatic image stitching processing will display the confirmation alert box.

Select one of the following actions:


Console Confirmation [Input]
[34035] A non-stitched long-view image exists.
>Finish the study after stitching?
If no images are stitched, the menu will be processed separately.
Yes
No
Suspend

Yes : Finishes studies after performing the automatic image stitching processing.

No : Handles the source images used for stitching as individual images and completes studies without performing the automatic image stitching processing. If this action is selected, the image stitching processing cannot be performed later.

Suspend : Stacks studies in the “Local WL” list without performing the image stitching processing. If this action is selected, redisplay the Study Screen to perform the automatic image stitching processing (as described in this section).

2 Manual Image Stitching Processing

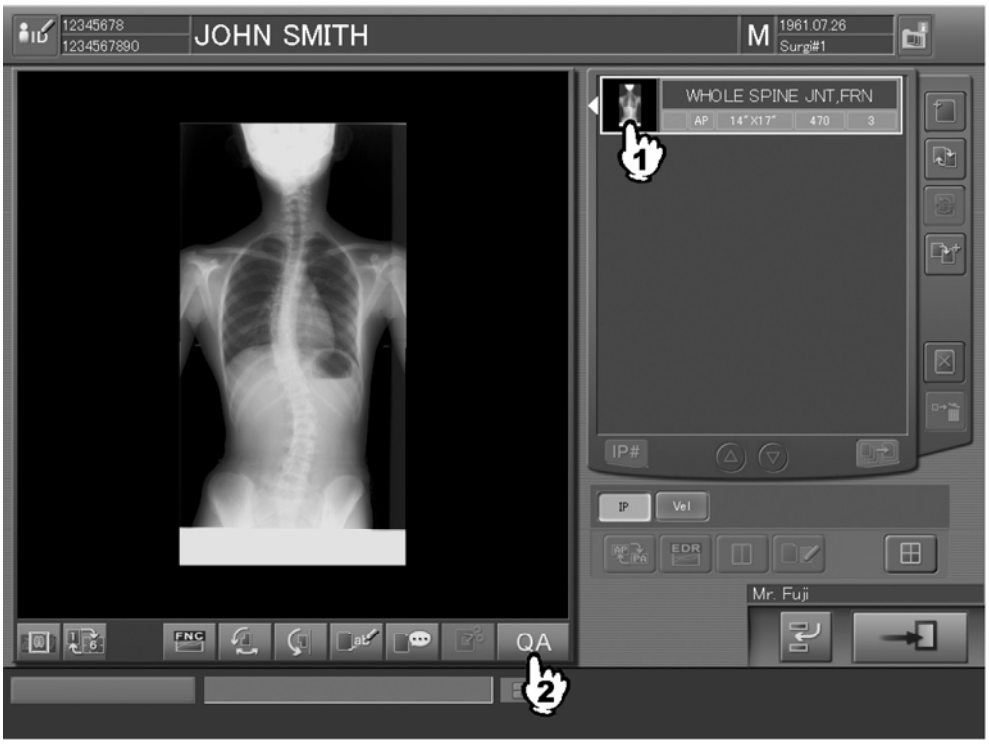
This function confirms/modifies the images stitched by performing the automatic image stitching processing.

(1) Starting the processing

Perform one of the following operations accordingly.

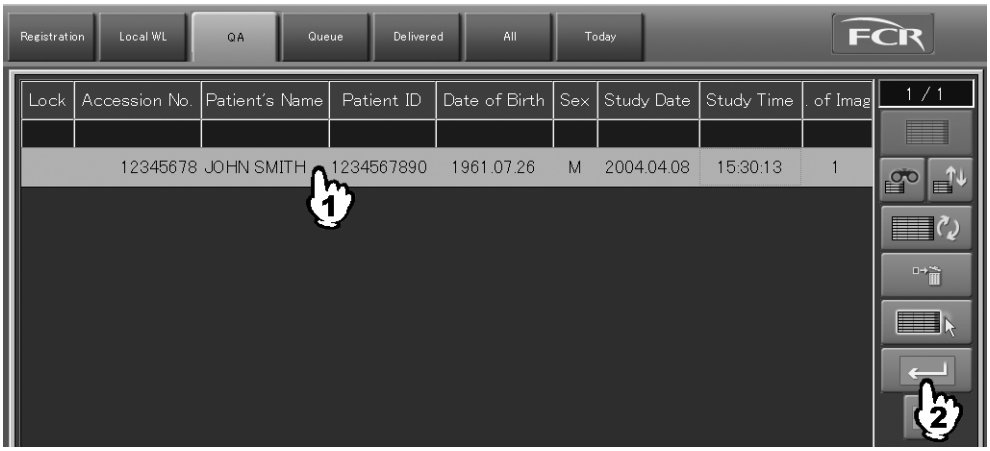
Starting the processing at the Study Screen :

Select a stitching image, and then QA.



Starting the processing at the lists :

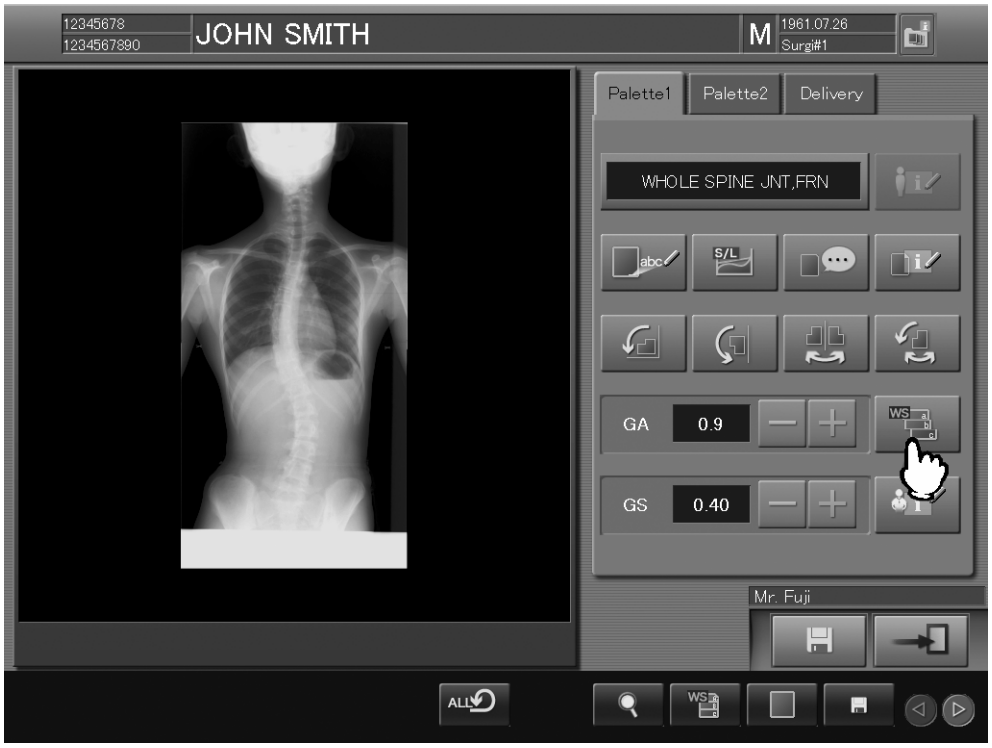
Select a study including stitched images at the list (QA/Delivered/All/Today), and then .



(2) Selecting the image stitching processing

The Image Edit Screen is displayed. The Image Edit Screen by image is displayed when the operation of “Starting the processing at the Study Screen” was performed, and the Image Edit Screen by study is displayed when the operation of “Starting the processing at the list” was performed. (The Image Edit Screen by image is used here for explanation purposes. However the same operation can be performed on both screens.)

Select in the “Palette”.



The stitched image and the source images can be displayed alternately as follows.

Select .

A palette will appear, by which you can change the display image type.

Select an icon and then

: Displays the stitched image.

: Displays the first source image used for stitching processing.

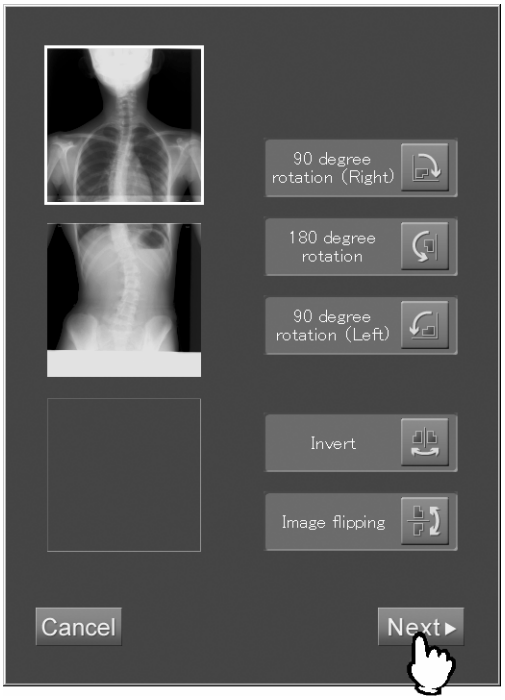
: Displays the second source image used for stitching processing.

: Displays the third source image used for stitching processing.

(3) Setting up image order/image direction

The image stitching box 1 is displayed.

Set up image order/image direction accordingly, and then select Next▸.



Cancel : Cancels the image stitching processing.

Setting up image order :

While selecting the image, move it up and down. The image order is then changed.

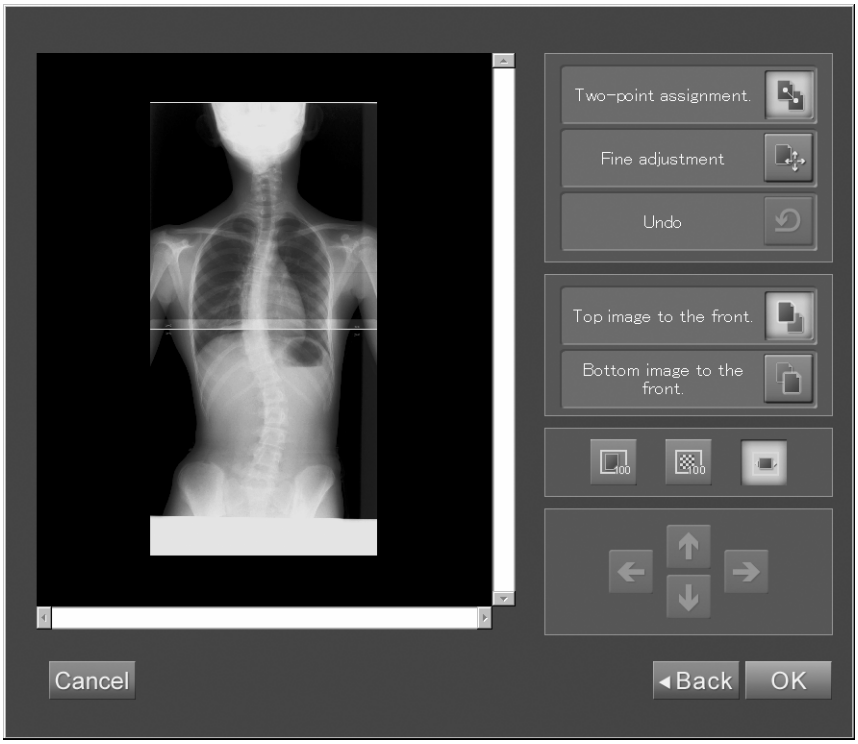
Setting up image direction :

Select the image and then one of the following icons.

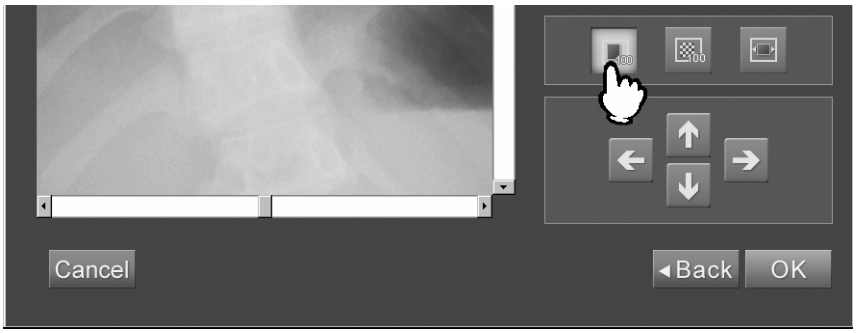
- : Rotates the image 90 degrees CW.
- : Rotates the image 180 degrees.
- : Rotates the image 90 degrees CCW.
- : Flips the image horizontally.
- : Flips the image vertically.

(4) Joining images

The image stitching box 2 is displayed.



When joining images, the target images can be magnified as necessary. Select a desired icon to display the images to make operation easier.



: Displays images in the same size as recorded on the IP.

: Displays images in the size that one pixel of the original image equals to one pixel on the display.

: Displays images matching the size of the image display field.

/ / / : Scrolls magnified images up and down and right and left.

Perform one of the following operations according to the joining method used.

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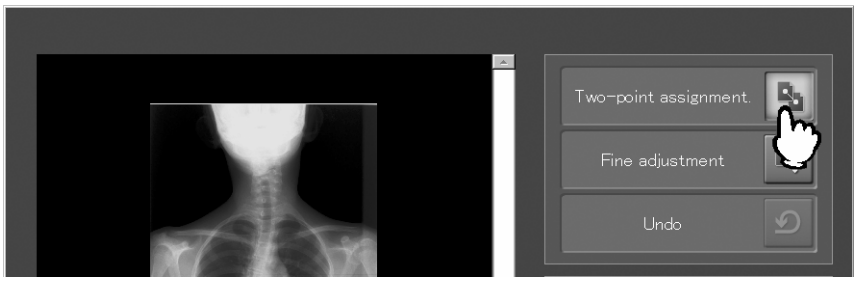
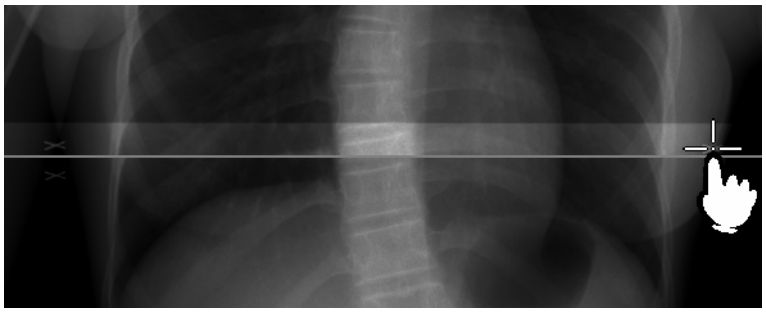
Specifying two joint points :
Images are joined together by fitting with each other the two joint points specified on the target images.

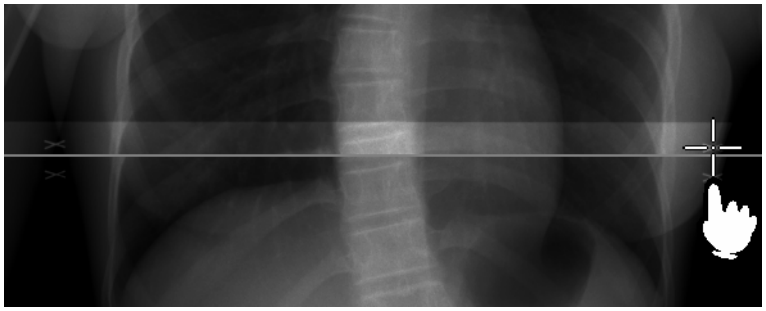
1) Select (Specifying two points).



2) Select a joint point on a desired image. The marker is then displayed. However, joints cannot be specified on the field which is already overlapped.



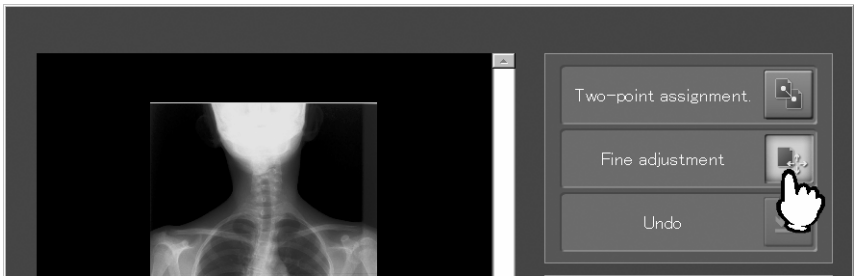
3) Select a joint point on the other image. The images are moved to be joined, and the joint points are overlapped with each other.



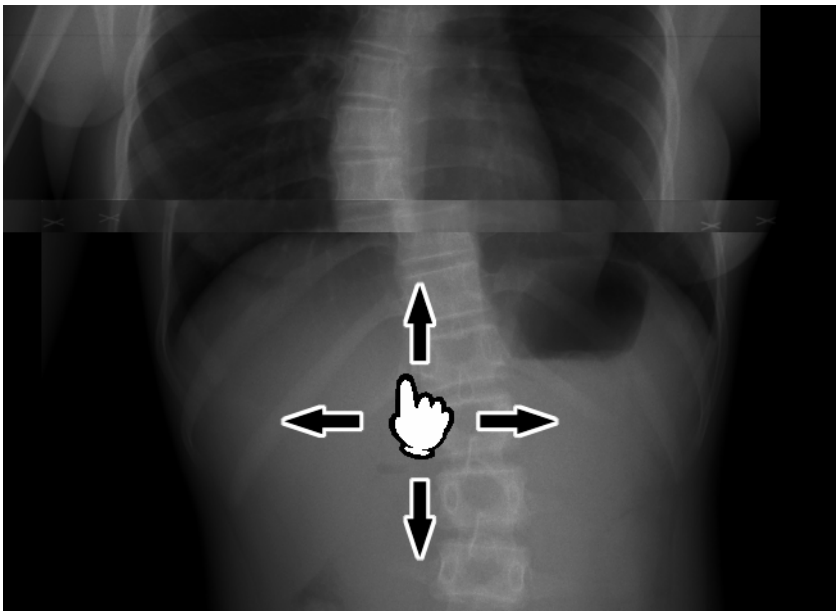
(Undo) : Cancels move.

Fine adjustment :
Adjusts images to be joined by finely moving them as necessary.

1) Select (Fine adjustment).



2) While selecting the image, move it to a desired position. Selecting an overlapped region enables to move two images at once.



(Undo) : Cancels move.

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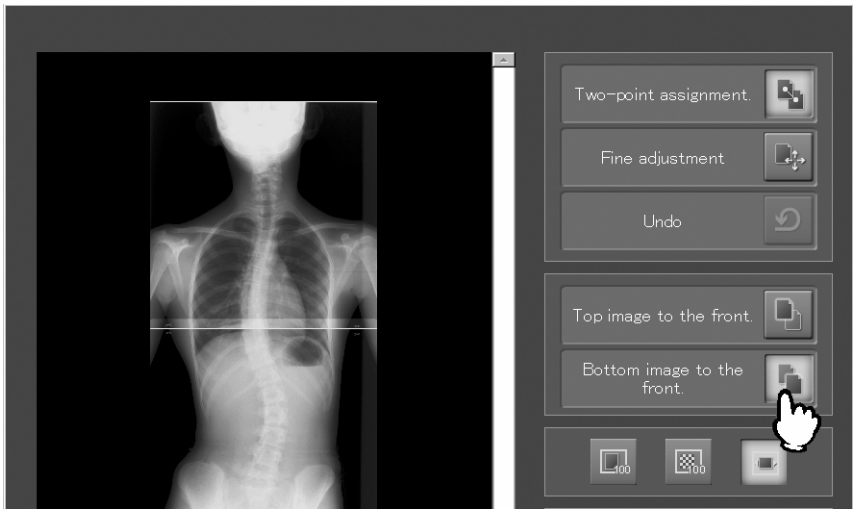
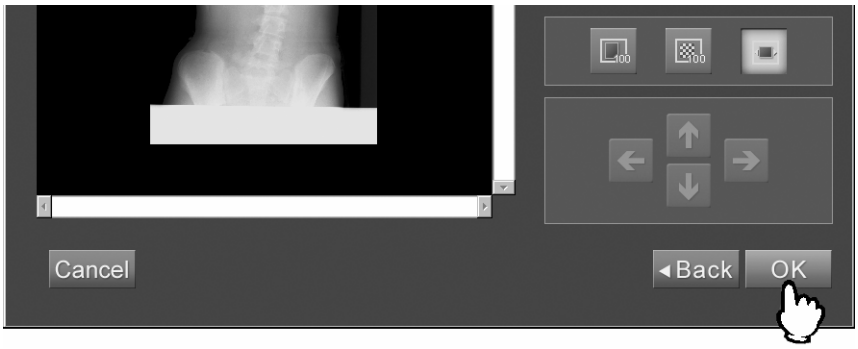
(5) Specifying image arrangement

When exposures are performed using IPs partially overlapping, the overlapped region and other regions will have different luminance on either one of the images. If the images are joined placing this image to the front, streaks may appear on the stitched image. To prevent this problem, select (Top image to the front) / (Bottom image to the front) to determine the image arrangement properly.



(6) Completing the processing

Select OK. This completes the image stitching processing and the box is then closed.



Back : Returns to the image stitching box 1.

Cancel : Cancels the image stitching processing.

3 Settings for Image Distribution from the QA Window

For stitched images generated based on the automatic image stitching processing, this function determines procedures to be used for printing images on film or storing images in files.

Select “Delivery” on the QA window.

: Displays a screen where the image distribution is to be determined for image printout on film.

: Displays a screen where the image distribution is to be determined for image storage in files.

: Displays a screen where the image distribution to other devices is to be determined.

: Indicates that the image distribution in files has been determined as follows.
· Only source images for stitching to a long-view image are to be output.

: Indicates that the image distribution in files has been determined to be one of the following.

· A stitched long-view image is to be reduced and then output on a 14”x17” film.
· A stitched long-view image is to be output in life size (real size).
· A stitched long-view image is to be output in life size (real size), and reduced and then output on a 14”x17” film.

When both and are shown, source images for stitching to a long-view image are to be output and a resultant stitched long-view image is to be reduced and then output on a 14”x17” film.

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: Indicates that the image distribution to printers has been determined as follows.
· Only source images for stitching a long-view image are to be printed.

: Indicates that the image distribution to printers has been determined to be one of the following.
· A stitched long-view image is to be reduced and then printed on a 14”x17” film.
· A stitched long-view image is to be printed in life size (real size).
· A stitched long-view image is to be printed in life size (real size), and reduced and then printed on a 14”x17” film.

When both and are shown, source images for stitching to a long-view image are to be printed, and a resultant stitched long-view image is to be reduced and then printed on a 14”x17” film.

(1) Settings for printing a stitched image

Select .

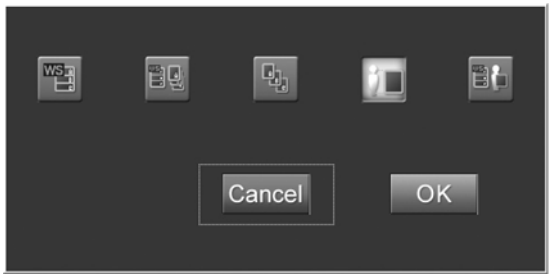
A screen like that shown below opens for you to determine the image distribution to printers.

: Selects a printer.

/ : Increases/decreases the number of printouts to be generated.

To select images to be used for film printouts, select a displayed study menus, and then select (a button used to output a stitched image).

A screen then opens, where an image to be printed is determined.



: Reduces a stitched long-view image and then prints it on a 14”x17” film.

: Reduces and then prints source images for stitching and a resultant stitched image on a 14”x17” film.

: Prints source images for stitching to a long-view image.

: Prints a stitched long-view image in life size (real size).

: Prints a stitched long-view image in life size (real size), and reduces and then prints it on a 14”x17” film.

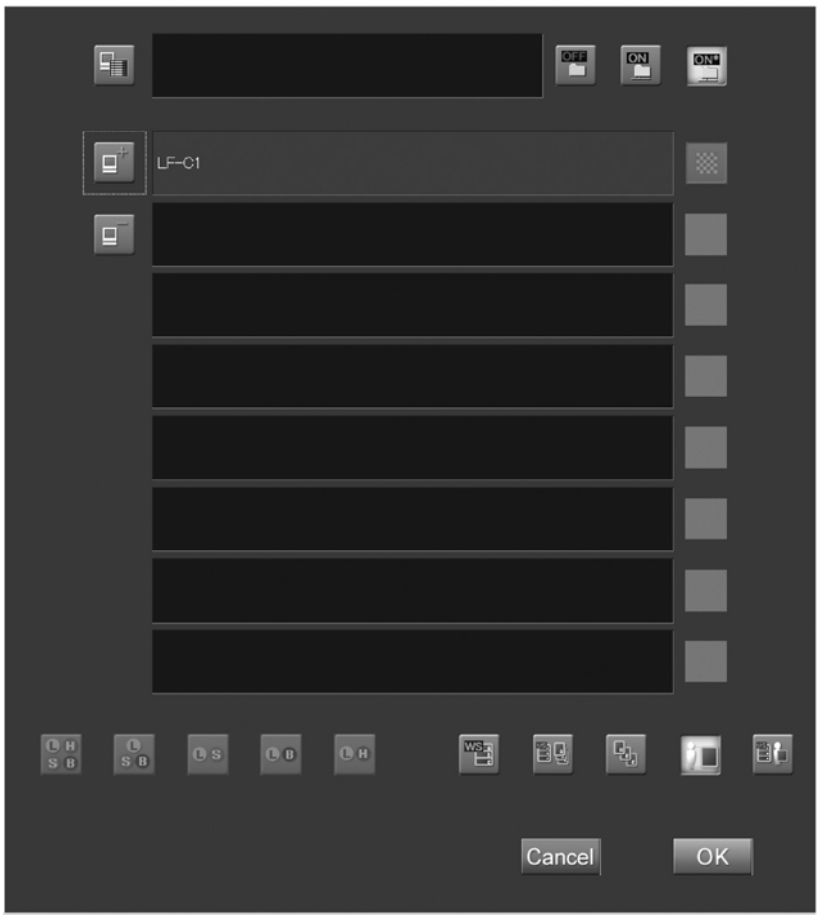
Select to save setup data.

Select if you wish to cancel setup data to close the screen.

(2) Settings for distributing stitched images to filing devices or soft copy devices

Select or .

A screen like that shown below opens for you to determine file storage.



: Displays a list of destinations for file distribution.

: Not to store images in a filing device.

: Stores images in a filing device.

: Converts high-resolution images to standard images and then stores resultant images in a filing device. (This is not set up under normal conditions.)

: Displays a list for addition of soft copy devices.

: Deletes added soft copy devices.

: Reduces a stitched long-view image to the 14”x17” size and then stores it appropriately.

: Reduces source images for stitching and a resultant stitched long-view image to the 14”x17” size and then stores them appropriately.

: Stores source images for stitching to a long-view image.

: Stores a stitched long-view image in life size (real size).

: Stores a stitched long-view image in life size (real size), and reduces and stores it in the 14”x17” size.

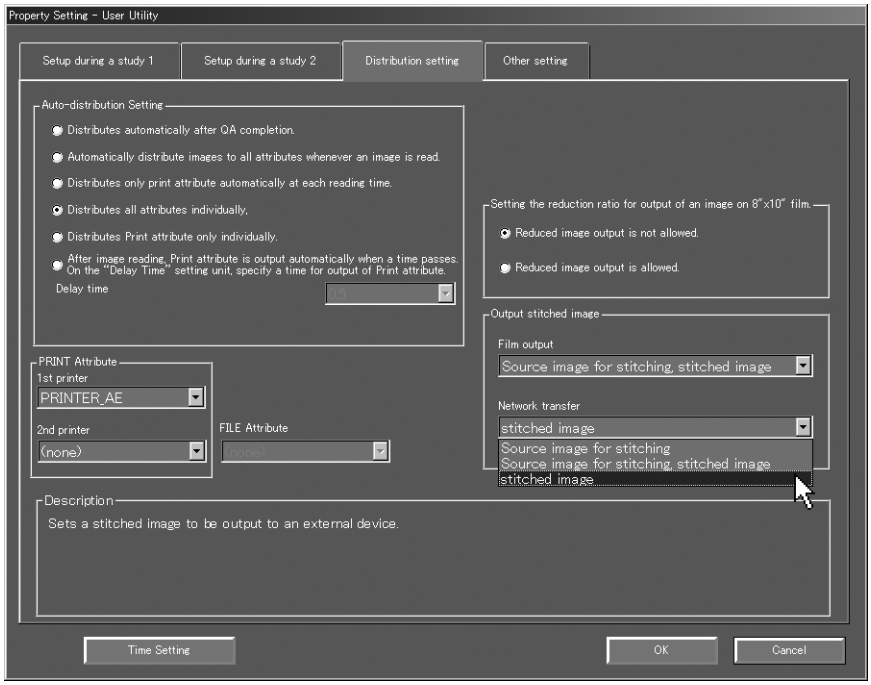
Select OK to save setup data.

Select Cancel if you wish to cancel setup data to close the screen.

4 Output-image Setting

This function sets output of stitched images to the external units.

This setting can be made as has been previously at the Property Setting of the User Utility.
Set up “Output stitched image” in the “Distribution setting” folder of “Property Setting - User Utility”.


Property Setting - User Utility
Setup during a study 1
Setup during a study 2
Distribution setting
Other setting
Auto-distribution Setting
Distributes automatically after QA completion.
Automatically distribute images to all attributes whenever an image is read.
Distributes only print attribute automatically at each reading time.
Distributes all attributes individually.
Distributes Print attribute only individually.
After image reading, Print attribute is output automatically when a time passes. On the "Delay Time" setting unit, specify a time for output of Print attribute.
Delay time
Setting the reduction ratio for output of an image on 8"x10" film.
Reduced image output is not allowed.
Reduced image output is allowed.
Output stitched image
Film output
Source image for stitching, stitched image
Network transfer
stitched image
Source image for stitching
Source image for stitching, stitched image
stitched image
PRINT Attribute
1st printer
PRINTER_AE
2nd printer
(none)
FILE Attribute
(none)
Description
Sets a stitched image to be output to an external device.
Time Setting
OK
Cancel

Film output :
Select images to be output on film from among the following.

- **Source images used for stitching**
  Outputs source images used for stitching to generate a long-view image.
- **Source images used for stitching and a stitched image (reduced to 14”x17” size)**
  Outputs source images used for stitching and a stitched long-view image reduced and printed on a 14”x17” film.
- **Stitched image (reduced to 14”x17” size)**
  Outputs a stitched long-view image reduced and printed on a 14”x17” film.
- **Stitched image (life size)**
  Outputs a stitched long-view image in its life size (100% size).
- **Stitched images (life size and reduced to 14”x17” size)**
  Outputs a stitched long-view image in its life size (100% size) and also reduced and printed on a 14”x17” film.

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Network transfer :
Select images to be transferred to network.

- **Source images used for stitching**
  Outputs source images used for stitching to generate a long-view image.
- **Source images used for stitching and a stitched image (reduced to 14”x17” size)**
  Outputs source images used for stitching and a stitched long-view image reduced and printed on a 14”x17” film.
- **Stitched image (reduced to 14”x17” size)**
  Outputs a stitched long-view image reduced and printed on a 14”x17” film.
- **Stitched image (life size)**
  Outputs a stitched long-view image in its life size (100% size).
- **Stitched images (life size and reduced to 14”x17” size)**
  Outputs a stitched long-view image in its life size (100% size) and also reduced and printed on a 14”x17” film.

NOTES

- The life-size image output function is available to enable a support to 100%-size image output. Note, however, that an error as shown below will occur depending on the used Image Reader or Image Recorder.
  · A ±1% error in relation to an image’s entire width.
  For a 14”x17” size, for example, a ±3.5 mm error will occur in relation to the entire width.
- On Imagers for imaging-diagnosis purposes shown below, images reduced to 98% size will be output depending on the equipment’s speci fications, even though a life-size image output has been specified on the CR Console.
  · DRYPIX1000 and DRYPIX3000

5 Notes for Performing Exposures

Pay attention to the following when performing exposures for images targeted for the image stitching processing.

Preparing the cassette :

- Use an FCR long-view exposure cassette to set IPs.
- When setting an IP in the cassette, match the right edge of the IP with that of the cassette so that there is no gap, and then close the lid gently so as not to cause the IP to slip off the proper position.
- Do not apply any strong impact to the cassette which may cause the IP inside to slip off the proper position.
- For details of operation using an FCR long-view exposure cassette, see the “FCR Long-View Exposure Operation Guide”.

Preparing exposure table :

- When using a stationary grid, set the grid at a right angle to the scanning direction of the IP.
- Do not use a compensating filter which controls X-ray transmission.
- Set the cassette so that the entire cassette is irradiated with X-rays as much as possible.
  If the irradiated regions is small, change the cassette and IP (size, number) to appropriate one.

Irradiating X-rays :

- Perform exposures with the same exposure conditions as in the F/S (Film Screen Exposure) system.
- Perform exposures so that markers are located within the irradiated field.

Replacing IP :

- After performing exposures, replace in the dark room or the like the IPs contained in the long-view cassette into the dedicated FCR cassette.

Reading images (operation at the Image Reader) :

- When stitching three images to generate a long-view image, insert first of all a cassette that is for the thickest part of the subject region. Moreover, when necessary information is not to be registered by the BCR, be sure to replace order of menus used already for exposures and then touch the image stitching icon.
  To handle a Triple Cassette, we recommend that you use a BCR to register IPs.
- To stitch multiple images together to generate a whole spine image, be sure to insert first a cassette containing an IP that was located on the lumbar spine side at exposure.

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